ENHANCEMENT OF TUBERCULOSIS KNOWLEDGE AFTER SOCIALIZATION ON TUBERCULOSIS AND INFUSUM SAMBILOTO AS SUPPORTING TUBERCULOSIS TREATMENT AMONG PARTICIPANTS IN TAMBAK ASRI, SURABAYA

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ABSTRACT

Background: *Tuberculosis (TB) was a chronic infection disease which needs long time treatment. Successful treatment of TB depend on patient's immunity status and behaviour on taking multi drugs therapy routinely. Knowledge of TB and how to do treatment successfully is important for TB patients and their families. Families of TB patient are key persons who observe directly when patient take the TB drug as PMO (Taking drug Observer/ Pengawas Minum Obat).* ***Methods:*** *Therefore this activity aims to increase knowledge of TB patients and their families concerning about TB, socialize about infusum Sambiloto as supporting treatment of TB. Participants of this activity were TB patients which were doing treatment in Dupak Public Health Center, Families of TB patients which were observing TB patients took the TB drugs and also health cadres of Dupak Public Health Center. Total participants were 54 persons. Method of this activity were Presentation, Discussion dan Demonstration.* ***Result:*** *Result of this activity were: The participants' Pre test result shows that half of the participants had good their knowledge about Tuberculosis. By using Wilcoxon Signed ranks test, there were significant different knowledge about TB among participants between pre and post of Socialization (p: 0.00), By using Sprearman test, there were no correlation between formal education level and level of Participant's knowledge about TB pre and post of Socialization. Socialization about Infusum Sambiloto as supplement therapy of TB is likely accepted by participants.*

Key words: *tuberculosis, sambiloto infusum, knowledge*

ABSTRAK

Tuberkulosis (TBC) adalah penyakit infeksi kronis yang memerlukan perawatan lama. Keberhasilan pengobatan TBC tergantung pada status kekebalan pasien dan perilaku terapi multi obat secara rutin. Pengetahuan tentang TB dan bagaimana keberhasilan melakukan pengobatan sangat penting bagi pasien TB dan keluarga mereka. Keluarga pasien TB adalah orang kunci yang mengamati secara langsung ketika pasien mengambil obat TB sebagai PMO (mengambil obat Observer/Pengawas Minum Obat). Oleh karena itu kegiatan ini bertujuan untuk meningkatkan pengetahuan pasien TB dan keluarga mereka mengenai tentang TB, sosialisasi tentang infusum sambiloto sebagai penunjang pengobatan TB. Peserta kegiatan ini adalah pasien TB yang melakukan pengobatan di Puskesmas Dupak, Keluarga pasien TB yang mengamati pasien TB mengambil obat TB dan kader kesehatan juga dari Puskesmas Dupak. Jumlah total peserta adalah 54 orang. Metode kegiatan ini adalah Presentasi, Diskusi dan Demonstrasi. Hasil kegiatan ini adalah: Hasil uji Pra para peserta menunjukkan bahwa separuh dari peserta memiliki pengetahuan yang baik mereka tentang Tuberkulosis. Dengan menggunakan uji Wilcoxon Signed peringkat, ada perbedaan yang bermakna pengetahuan tentang TB di antara peserta antara pra dan pasca Sosialisasi (p: 0,00). Dengan menggunakan uji Spearman, tidak ada korelasi antara tingkat pendidikan formal dan tingkat pengetahuan Peserta tentang TB pra dan pasca Sosialisasi. Sosialisasi tentang Infusum sambiloto sebagai suplemen terapi TB sepertinya diterima oleh peserta.

Kata kunci: *tuberkulosa, infusum sambiloto, pengetahuan*

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INTRODUCTION

Tuberculosis is a chronic infection disease which is caused by *Mycobacterium tuberculosis* bacteria, and it commonly attacks human lung parenchyma tissue. Tuberculosis prevalence in Indonesia is still high and tend increasing the same as HIV prevalence.

Based on data Dupak Public Health Center, new cases of TB were 69 (94.5% of target) in 2008, percentage of conversion *Bakteria Tahan Asam* (BTA) + to BTA - were 65.1% of target. Tambak Asri Morokrembangan sub-district as part of the Public Health Center areas is Commercial Sex Workers (CSW) localization and the CSW is a high risk group of HIV Infection. Many cases of TB were detected in HIV patients. The tuberculosis treatment needs good organization on regular treatment, directly monitoring of taking anti tuberculosis therapy with proper doses within 6 to 9 month duration. The failure level of treatment for tubercular infection is quiet high. From report of the (Penanggulangan dan Pemberantasan Tuberkulosis Paru (P2TB) or the Organization of Tuberculosis Preventing and Tackling) in East Java Province, early 2000s proved that there were some areas in the Province had at least 5 to 8% failure percentage from treated tuberculosis (East Java Province Health Office, 2001).

Knowledge concerning TB disease among TB patients and their families was important for successful treatment. Hence socialization concerning Tuberculosis would enhance the knowledge about Tuberculosis. Besides, tuberculosis is highly influenced by patient immune status so Sambiloto as one of immune stimulator was socialized to participants.

The problem: was socialization concerning TB disease will enhance TB patient and their families knowledge? Was socialization on Infusum Sambiloto as Immunostimulator accepted by TB patients?

TUBERCULOSIS DISEASE

Tuberculosis is a chronic infection disease which is caused by *Mycobacterium tuberculosis bacteria*, and it commonly attacks human lung parenchyma tissue. This chronic disease experience continuously healing-relapse phase. Symptoms of Pulmonal Tuberculosis are continuous coughs for more than three weeks and sputum usually comes along with blood, hardly breathing and sharp pain in chest, decreasing appetite, loss of weight, sweating at night, and mild fever.

The Pathogenesis of Tuberculosis

Tuberculosis is mostly influenced by patient Immune Status. The infection happens when Tuberculosis bacillus are inhaled to lungs alveolar. Then the Macrophage and Necrotic accumulation of inflammation responses come up and migrate to regional lymph gland and forming some primary complexities. Bacillus in the lungs tissue or lymph gland could be swallowed by the macrophage and it is multiplying in the macrophage. The primary lesion recovers and there happens absorption of inflammation exudates and bacillus destruction. If the bacillus exists, it can destruct the lymph gland, blood, and other organs.

Five to ten percents of infected individual improve pathological responses, and bacillus proliferation takes place within the infected part, followed by increasing of macrophage cells and other cells to become longer and solid, make tubercle seems like granule nodule, that is the mechanism barriers of bacillus multiplying cycle. This lesion can recover by calcification and the bacillus can exist for several years. If the immune status compromises, the lesion becomes active. The released bacillus spreads to other part of lung or to systemic organs. Bacillus can spread to bronchus, being aspirated to the lower part of lungs portion or comes out along with sputum. The manifestation of tuberculosis reactivation as in a condition of compromised immune among adults, malnutrition, diabetes and long–term steroid cortisone therapy individuals.

The pathogenic of Tuberculosis is primarily based on immune pathologic process of the interaction between the micro bacteria with the immune cells and its cytokine (Bohlson, 2001).

Tuberculosis Treatment

Tuberculosis treatment needs good organization in treating by regularly public service program, directly monitoring of taking anti tuberculosis therapy with proper dose within 6 to 9 month duration to cure the biphasic nature, dormant stage, semi dormant, persistent or actively multiplying and strengthen the metabolism from *Mycobacterium tuberculosis*. The development of anti-tuberculosis closes the ideal condition, by anti-tuberculosis drug combination has ability to destruct a large amount of the active-

multiplying bacillus that is sterilization ability, the ability to destruct the bacillus as for dormant/semi dormant/persistent metabolisms and also, the ability to prevent a resistance.

The WHO tuberculosis medicine principle is to provide medicines within a long period to decrease relapse possibility by combining two or more medicines than just taking one medicine. This combination has an ability to break the macrophage and destroy the bacillus in the acid domain within macrophage, bactericidal, sterilization and prevent resistance; fully sharp-sighted of taking the medicines. The primarily anti-tuberculosis medicines, *Isoniazid* (INH), *Rifampicin* and *Pyrazinamide* can through the macrophage well. Besides, it can be combined with *Ethambutol*.

The failure level of treatment for tuberculosis is quiet high. From the report of P2TB in East Java Province in early 2000s, proved that there were some areas in the province had at least 5 to 8% failure percentage of treated tubercular (East Java Local Health Department, 2001). This failure were caused by several factors. One of the most potential factors was lack notification of determining medicine dose to the tubercular. Besides, there was a negligent in taking anti-tuberculosis medicine. The medicines distributed by the P2TB program consists of Obat Anti-tuberculosis (OAT), or as *Isoniazid* (INH), *Rifampicin*, *Ethambutol*, and *Pyrazinamide* combination that are given in minimum six month term (P2TB, 2000). Some researchers reported increasing resistance of *Mycobacterium Tuberculosis* on OAT. From Surabaya city (1999), there was reported the resistance of Rifampicin was 14.44% from 180 isolate *Mycobacterium tuberculosis* strain from chronicle tuberculin sputum received at Dr. Soetomo Microbiological Clinic Laboratory (Mertaniasih, 2000). Aditama, near 1994 reported from a research in Jakarta. He found 16.83% of *Mycobacterium tuberculosis* rifampicin strain resistance from 1259 tubercular sputum isolate at Persahabatan Hospital (Aditama and Wijanarko, 1996).

***Directly Observed Treatment Short course* (DOTS) Method**

Directly Observed Treatment Short course (DOTS) method is a Tuberculosis preventing strategy recommended by WHO. Trials among several running countries showed that it is the most effective method to achieve a high Tuberculosis recovering level. The directly Observed Treatment Short course (DOTS) composed of tubercular implementation rules from maintenance methods of diagnose, medicine supplies and proper treatment, treatment monitoring and reciprocal and continued report. Hence each tubercular can be cases thoroughtly monitored. WHO recommendation is dedicating to high TB prevalence countries with low per capita income, assuming that diagnosis tools and treatment monitoring by culture differentiation, sensitivity test, and radiographic are inadequate.

The DOTS method that is highly recommended by WHO, has the most important 5 elements. They are: 1) government commitment assuring for the program approach, 2) confirming cases by microscopic sputum examination among patients have treatment in public health facilities distribution of standard medicines for 6 to 8 months among BTA+ monitored, 3) in the first term of two months, 4) good condition of anti-tubeculosis distribution (OAT), 5) report and record system on standard examination of the treatment in accomplishing the TB program.

SAMBILOTO PLANT

Sambiloto plant (*Andrographis paniculata*) wildly grow in open areas, such as garden, river's side, wet land, and on yards. The plant have been traditionally used to cure infection as chronicle disease, The AI isolat, diterpenic lacton compounding of the dried-herbal extract *Andrographis paniculata* have been proved as an imunostimulator (Wydiawaniyanti 2001). In 2000, Wydiawaruyanti had proved the Sambiloto diterpanic lacton compounding influenced TCD8+ limfosit cells which were given this composition

with 1 and 10 µg/ml concentration. It showed that there was an progress activity of TCD8+ cells as a toxic effect to the targeted malaria infected cells. *Andrographis paniculata* had been tested as an potential immunostimulator to immune responses of specicfic or non specific antigen macrophage against some microba. *Andrographis Paniculata* Ness or Sambiloto is one of the most traditionally used plants that is expected as an anti-chronicle infection. Furthermore, it is widely found in Indonesia. Widyawaruyanti (2001) did toxical AI isolat, DL isolat tests and standardized manitol extract of Sambiloto. These test showed the safety from acute or chronic toxicity.

Sambiloto leaves and branches have a lactone which composed of dioksiandrographolid, andrographolid, neoandrographolid, 14-diokside-11-12-didehydroandrographolid, and homoanrographolid. They also composed of flavonoid, alkane, keton, aldehid, minerals (calium, calcium, natrium), cersic acid, and resin. The flavonoids are mostly isolated from the root. They are polymetoxicflavon, andrographine, paniculine, mono-0- methilwithin, and 7.4 dimetyleter apigenin. The active andrographolid is strongly proved as a hepatoprotector which protect liver from toxic.

THE CONCEPT OF PROBLEM SOLVING

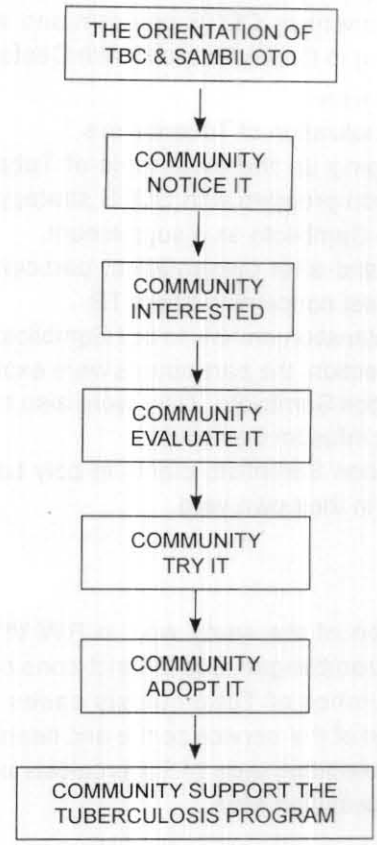

Figure 1. The flow of problem solving

Table 1. The participant characteristics in RW VI Tambak Asri Morokrembangan Sub-District, 2009

Variables	Category	Tuberculars		Observers		Cadres		Total	
		n	%	n	%	n	%	n	%
Sex	Males	7	36.8	6	31.6	2	12.5	15	27.8
	Females	12	63.2	13	68.4	14	87.5	39	72.2
Age (year)	≤ 20	0	0.0	3	15.8	0	0.0	3	5.6
	21–30	0	0.0	5	26.3	2	12.5	7	13.0
	31–40	5	26.3	8	42.1	9	56.3	22	40.7
	41–50	5	26.3	3	15.8	3	18.8	11	20.4
	51–60	8	42.1	0	0.0	2	12.5	10	18.5
	> 60	1	5.3	0	0.0	0	0.0	1	1.9
Education	Not school	2	10.5	1	5.3	1	6.25	4	7.4
	Elementary S.	8	42.1	4	21.05	3	18.75	15	27.78
	Junior High S.	4	21.05	7	36.8	6	37.5	17	31.48
	Senior High S.	4	21.05	4	21.05	5	31.25	13	24.07
	Missing	1	5.3	3	15.8	1	6.25	5	9.26

METHODS

The target population were tuberculosis patients having treatment by DOTS program and also their families living in Dupak Public Health Center.

The activity were:

1. The Socialization of Tuberculosis
   By bringing up the main topic of Tuberculosis prevention program with DOTS strategy and the Infusum Sambiloto as a supplement.
   Before and after presentation, participants had writing test concerning about TB.
2. The explanation on how to boil Sambiloto leaves.
   In this section, the participants were explained on how to boil Sambiloto. They were also treated by drinking infusum Sambiloto.
3. Distribution Sambiloto plants in poly bags to be planted in their own yard.

RESULT

Location of the study was in RW VI Tambak Asri Morokrembangan Sub-District considering as: 1) High number of Tuberculosis cases, 2) High coordination of the service centre and health cadres, 3) High susceptible area of Tuberculosis asTambak Asri is a prostitution area.

The socialitation was held on March 15th, 2009 at 9 am to 1 pm in RW VI Tambak Asri Morokrembangan Sub-District Building. There were 54 participants, including 19 tuberculars having DOTS treatment, 19 observers, and 16 health cadres.

The participants characeristics

Table 1 showed that most (72%) of participants were females with an average age of 31 to 40 years old and 31.48% were among them graduated junior high school. The mean age of participants was 39.96±11.3 year old.

The participant knowledge

The participant knowledge about Tuberculosis was measured by pre and post test. Results were presented on table 2 and 3.

Table 2 shows that a half of participants had good knowledge about Tuberculosis. The TB patients and observers mostly had higher knowledge about Tuberculosis, in comparation to cadres.

Table 3 it can be concluded that after the Socialization of Tuberculosis, most of participants (tuberculars, observers, and cadres) had good knowledge about Tuberculosis. There was a progress among the participants if compared with the knowledge before the socialization.

Table 2. The participants pre test result in RW VI Tambak Asri Morokrembangan Sub-District 2009

Value	Category	Tuberculars		Observer		Cadres		Total	
		n	%	n	%	n	%	n	%
≤ 25	Less	2	10.5	2	10.5	1	6.3	5	9.3
26–74	Enough	7	36.8	7	36.8	8	50.0	22	40.7
≥ 75	Good	10	52.6	10	52.6	7	43.8	27	50.0

Table 3. The participants post test result in RW VI Tambak Asri Morokrembangan Sub-District 2009

Value	Category	Tuberculars		Observer		Cadres		Total	
		n	%	n	%	n	%	n	%
≤ 25	Less	1	5.3	1	5.3	0	0.0	2	3.7
26–74	Enough	3	15.8	1	5.3	3	18.8	7	13.0
≥ 75	Good	15	78.9	17	89.5	13	81.3	45	83.3

Table 4. The corelation of participants education level and knowledge earning on Tuberculosis before and after socialization of Tuberculosis in RW VI Tambak Asri Morokrembangan Sub-District 2009

	Knowledge earning	n	r_s	P
Education level	Before the activity	49	-0,113	0,441
	After the activity	49	-0,082	0,573

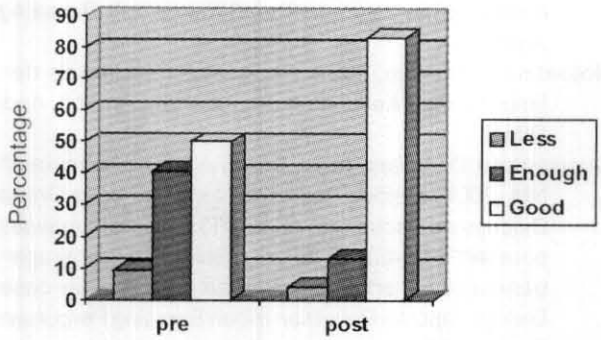

Figure 2. The comparation of participants knowledge before and after Socialization on Tuberculosis in RW VI Tambak Asri Morokrembangan Sub-District 2009

The *Wilcoxon signed ranks test* to compare the participants knowledge before and after this activity showed the activity was quiet significant, (P=0.000). It showed there was a significant progress on their knowledge and it also fulfilled requirement of participant achievement indicator. Figure 2 shows the comparation knowledge achievement before and after the Socialization activity on Tuberculosis.

The corelation of participants education level and knowledge earning (before and after the activity) can be measured by the *Spearman Corelation*. The participants examined were 49 people (5 participants who did not fill the education level were classified as missing).

From the test result, it concludes there was no corelation between education background and knowlegde earning before and after the activity ($p > \alpha$). If we notice the Spearman corelation coefficient, there was a weak corelation (–0.082). It mean that education background didn't influence the knowledge obtaining.

Socialization of Sambiloto

In this section, the participants were explained on how to make Infusum Sambiloto. They were also treated to drink infusum Sambiloto. No participants refused to drink infusum sambiloto. At last activity, the participants were given Sambiloto plants in poly bags to be planted in their own garden. In Indonesia, there's a high number of Tuberculosis cases. That is why the government has actively participated in global preventing of Tuberculosis using DOTS program which recommended by WHO. Until now, it is reported a high rate of DOTS anti-Tuberculosis treatment failure. It is caused by the failure of immunophatological process which is started by the abnormality process of macrophage cells (Schluger & Rom 1998). The activation process of Macrophage within the tuberculars can be conducted by immunostimulan process. One of materials that mostly used to cure the infection is Sambiloto plant (*Andrographis paniculata*). It also has been proved as a good immunostimulator. By adding the Sambiloto plant to the process TB treatment with OAT, it is expected to increase recovery rate.

CONCLUSIONS AND SUGGESTIONS

Conclusions

1. There was an enhanced of knowledge earning among participants after socialization on Tuberculosis.
2. Socialization about Infusum Sambiloto as supplement therapy of TB is likely accepted by participants.

Suggestion

1. It needs a continued evaluation to monitor spreading of the activity results.
2. It needs an evaluation on how to produce Infusum Sambiloto as tuberculosis supplement.
3. The activity needs to be held in other areas to socialize the use of Sambiloto as a suplement to support tuberculosis DOTS program.

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